

Pdia3 Cas9-KO Strategy

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Design Date:	2019-12-16

Project Overview

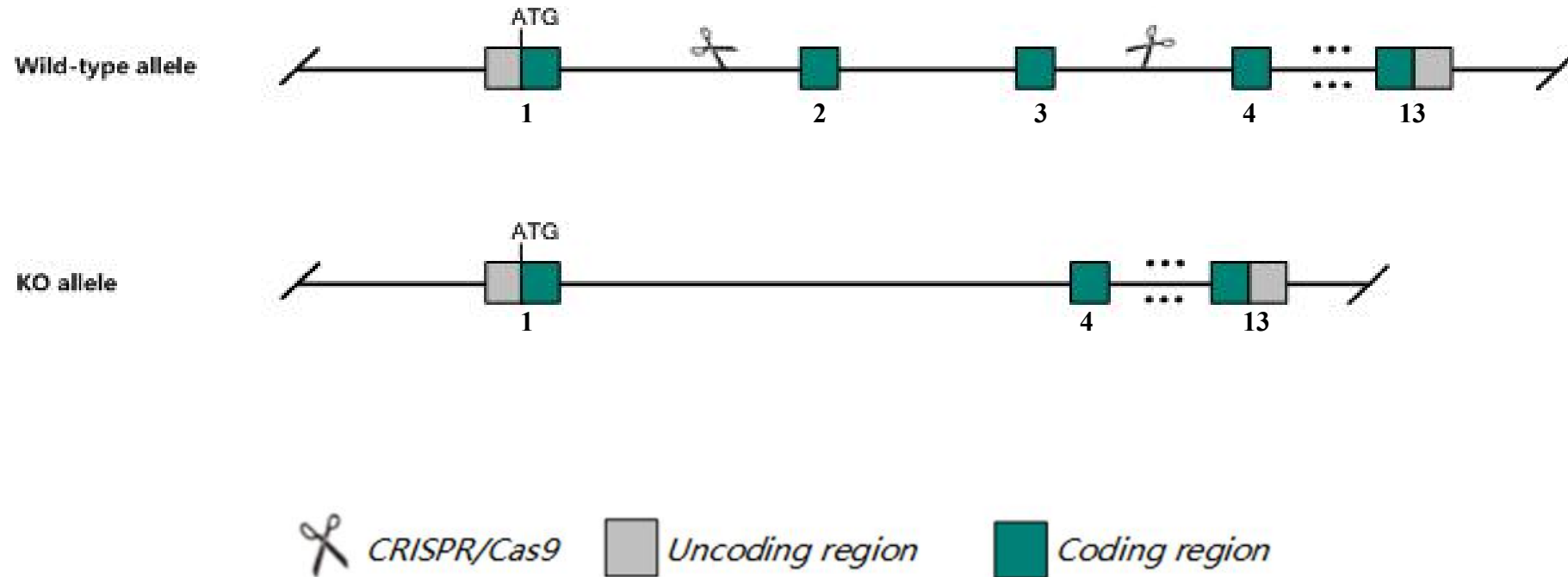
Project Name	<i>Pdia3</i>
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Project type	Cas9-KO
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Strain background	C57BL/6JGpt
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Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pdia3* gene. The schematic diagram is as follows:



The *Pdia3* gene has 4 transcripts. According to the structure of *Pdia3* gene, exon2-exon3 of *Pdia3-201* (ENSMUST00000028683.13) transcript is recommended as the knockout region. The region contains 197bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Pdia3* gene. The brief process is as follows: CRISPR/Cas9 system

According to the existing MGI data, Mice homozygous for a knock-out allele die by E13.5 with minor changes in ER calcium capacity and unfolded protein response in mouse embryonic fibroblasts. Mice homozygous for a gene trap allele die prior to birth while heterozygous mice exhibit abnormal bone volume bone morphology.

The *Pdia3* gene is located on the Chr2. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.

This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Pdia3 protein disulfide isomerase associated 3 [Mus musculus (house mouse)]

Gene ID: 14827, updated on 7-Apr-2019

Summary



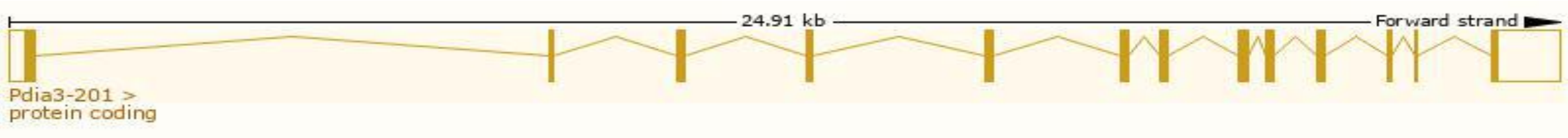
Official Symbol	Pdia3 provided by MGI
Official Full Name	protein disulfide isomerase associated 3 provided by MGI
Primary source	MGI:MGI:95834
See related	Ensembl:ENSMUSG00000027248
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	58kDa, ERp57, ERp60, ERp61, Erp, Grp58, PDI, PDI-Q2, PI-PLC, PLC[a], Plca
Expression	Ubiquitous expression in placenta adult (RPKM 203.6), ovary adult (RPKM 132.6) and 28 other tissues See more
Orthologs	human all

Transcript information Ensembl

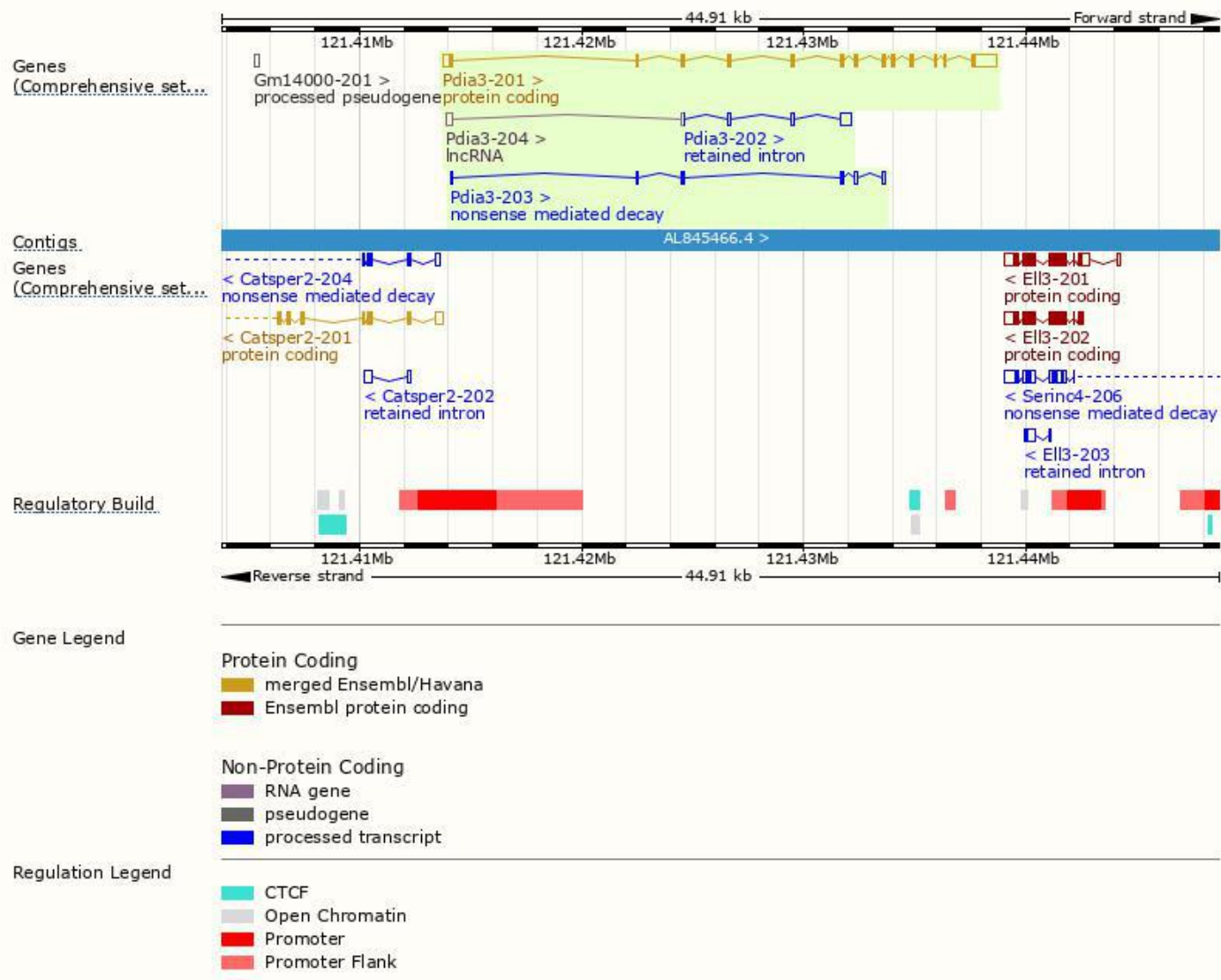
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pdia3-201	ENSMUST00000028683.13	2770	505aa	Protein coding	CCDS16643	P27773	TSL:1 GENCODE basic APPRIS P1
Pdia3-203	ENSMUST00000135079.1	722	124aa	Nonsense mediated decay	-	F6Q404	CDS 5' incomplete TSL:5
Pdia3-202	ENSMUST00000130450.1	736	No protein	Retained intron	-	-	TSL:2
Pdia3-204	ENSMUST00000153378.1	400	No protein	lncRNA	-	-	TSL:5

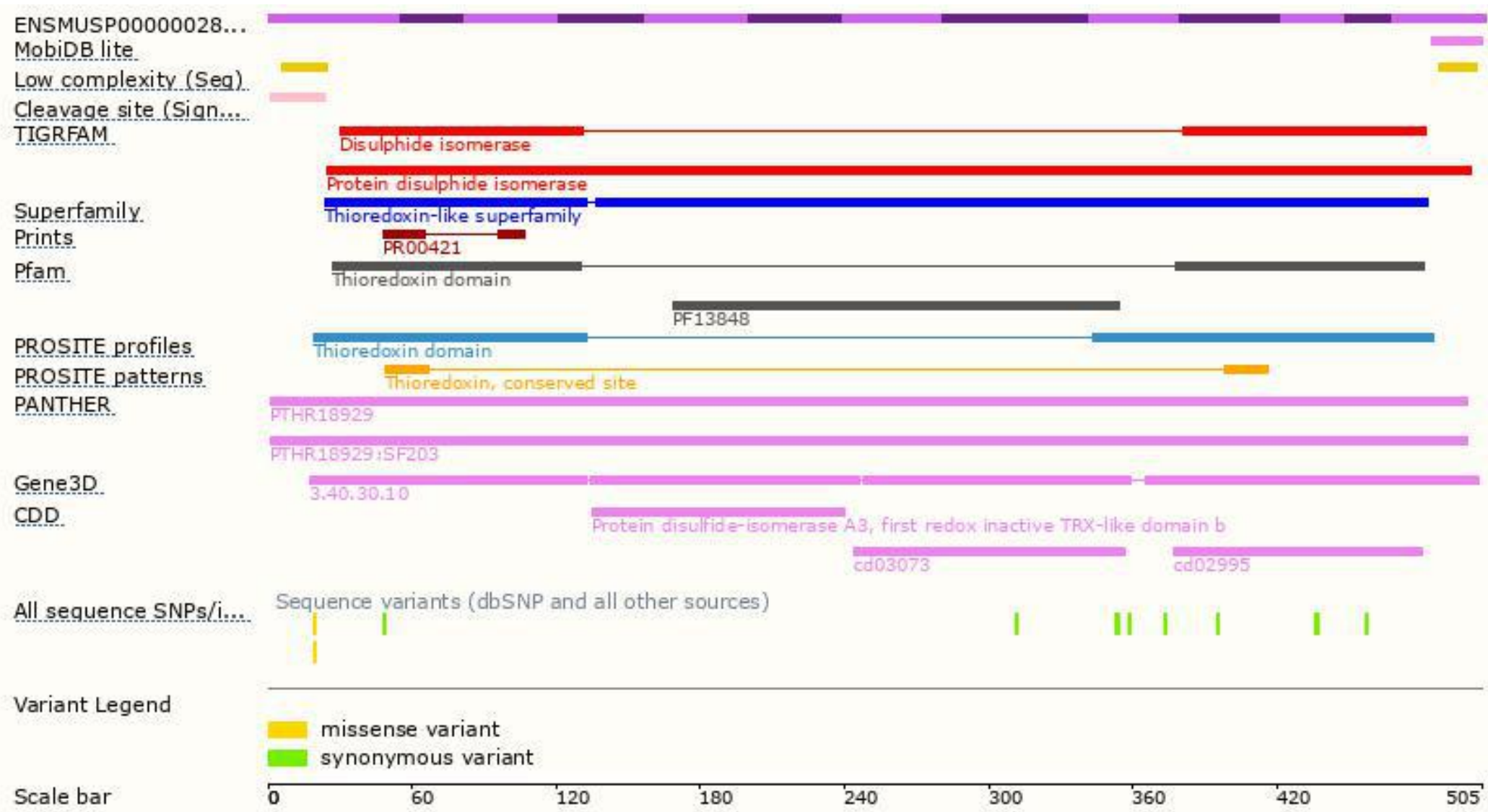
The strategy is based on the design of *Pdia3-201* transcript,The transcription is shown below



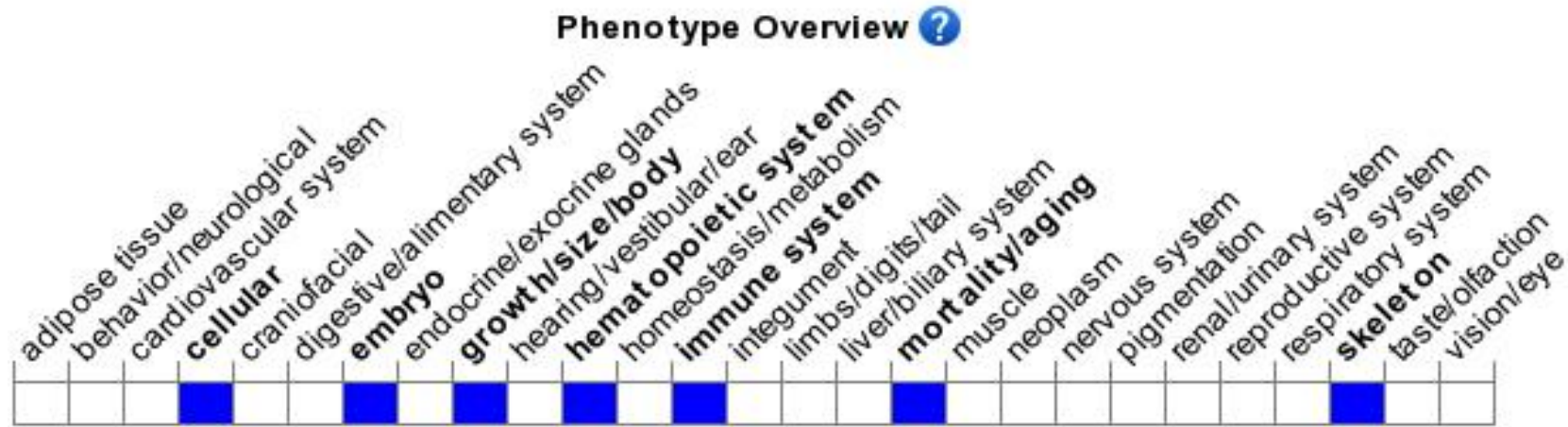
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

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If you have any questions, you are welcome to inquire.
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